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 McCormick et al.

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(54) **PROCESS FOR COATING AND/OR
 TOUCHING UP COATINGS ON METAL
 SURFACES**

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 C23C 22/33; B05D 1/18; B05D 3/02**

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(56)

References Cited

U.S. PATENT DOCUMENTS

4,264,378 A	4/1981	Oppen et al.	148/6.15 R
4,384,902 A	5/1983	Crotty et al.	148/6.21
4,749,418 A	6/1988	Saeki et al.	148/6.16

FOREIGN PATENT DOCUMENTS

EP	0015020	9/1980
EP	0019430	11/1980
EP	0214571	3/1987
EP	0391442	10/1990
GB	2259920	3/1993
WO	91 05078	4/1991
WO	95 04169	2/1995
WO	95 25831	9/1995
WO	96 07772	3/1996
WO	96 19595	6/1996
WO	97 02369	1/1997
WO	97 21845	6/1997
WO	97 41277	11/1997

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(57)

ABSTRACT

A composition and method for coating and touching up a metal surface is provided. The composition contains from about 0.5 to about 240 millimoles per kilograms of a fluorometallate ion, from about 0.5 grams/liters to about 10 grams/liter of phosphorous-containing inorganic oxy anions calculated at their stoichiometric equivalent as H_3PO_4 ; from about 0.05 g/l to about 3.5 g/l of hexavalent chromium and from about 0.10 g/l to about 2.20 g/l of trivalent chromium ions.

22 Claims, No Drawings